Stress, resilience and leisure coping among university students: applying the broaden-and-build theory

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Abstract

Evidence suggests that leisure coping is affiliated with resilience, and that both predict stress-coping and wellbeing. However, a theoretical explanation of how resilience is associated with the stress-reducing properties of leisure coping is lacking. Using the broaden-and-build theory, a model was developed proposing that resilient individuals proactively use leisure coping to cultivate positive emotions and in turn enhance wellbeing. Leisure coping and positive affect were suggested to mediate the relationship between resilience and wellbeing outcomes (stress and flourishing). The model was tested among 202 UK undergraduates, a population reported to experience high stress. Structural equation modelling revealed that resilience had a significant positive effect on flourishing. Leisure coping beliefs demonstrated a positive relationship with resilience, positive affect, and flourishing. Positive affect mediated the relationship between resilience and flourishing, and between resilience and stress. Leisure coping strategies did not meaningfully contribute to the model. Leisure beliefs may have emerged as more important than leisure strategies because leisure beliefs are relatively stable with more enduring effects on health and wellbeing, while leisure strategies are transient and situation-based. Future research should examine the relationships longitudinally to explore developmental change. Implications of the findings for undergraduates are discussed.

Keywords: flourishing; leisure coping; positive emotion; resilience; student stress

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Introduction

Stress

Researching stress requires research participants likely to be facing significant levels of stress. British university students are suitable participants as they are faced with an increasing range of stressors likely to have a cumulative impact on their coping ability (Denovan & Macaskill, 2013). Stressors include self-funding their education through student loans, resulting in more students combining study with paid employment (National Union of Students, 2008). A UK government agenda to encourage students from sectors of society previously under-represented in universities has resulted in significant numbers of students being the first in their family to attend university (DfES, 2003). Previous international research suggests this is an additional stressor (e.g. Vaez & Laflamme, 2008). These stressors add to those traditionally associated with university study such as course-work deadlines and examinations (e.g. Robotham & Julian, 2006). The university transition also places demands on undergraduates' coping resources, increasing the potential to develop maladaptive coping behaviours (Steinhardt & Dolbier, 2008). Coping is defined as the process of managing external and/or internal demands that are appraised as taxing or exceeding an individual's resources (Lazarus & Folkman, 1984). It is not simply stress but how a person copes with it that determines wellbeing (Zeidner & Endler, 1996). Understanding coping is fundamental for research and theory on adaptation and wellbeing (Lazarus, 1993).

These increases in undergraduate stress are not limited to the UK, and research reports mean stress levels exceeding general population levels in Sweden (Vaez, Kristenson, & Laflamme, 2004), and Canada (Adlaf, Gliksman, Demers, & Newton-Taylor, 2001).

American research associates increases in undergraduate stress with decreases in mental health (Blanco, Okuda, Wright, Hasin, Grant, Liu et al. 2008). Furthermore, perceived stress has been associated with unhealthy behaviours among undergraduates, including substance abuse (Park, Armeli, & Tennen, 2004), 'binge drinking' (Gill, 2002), reduced social involvement (O'Brien et al. 2008), and poor academic performance (Sanders & Lushington, 2002). Thus, researching potentially constructive coping such as leisure coping is important.

Leisure coping

Iwasaki and Mannell (2000) defined leisure as a new coping strategy, proposing that undertaking leisure pursuits can help individuals cope with stress and improve wellbeing. Research supports this proposition (e.g. Iwasaki, Mactavish, & MacKay 2005; Kleiber, Hutchinson, & Williams, 2002). Within Iwasaki and Mannell's (2000) model, it is the underpinning psychosocial functions of leisure rather than the specific activity that are important. Coping is divided into leisure beliefs and leisure strategies. Leisure beliefs represent individuals' generalised beliefs that leisure engagement helps to manage stress and further divide into leisure autonomy and leisure friendships. Leisure autonomy represents beliefs that leisure is self-determined and cultivates feelings of empowerment to deal with challenges in life; whereas leisure friendship represents beliefs that leisure provides social support due to friendships created through leisure pursuits. Leisure autonomy includes lower order components of self-determination and empowerment, and leisure friendships include lower order components of emotional support, esteem support, tangible aid, and informational support.

Leisure strategies relate to how people use leisure pursuits to cope with stress and are situation-based behaviours or cognitions. Sometimes an individual may choose a leisure activity to cultivate cognitions or behaviours for reducing stress, and in other circumstances an individual may find that a leisure activity has helped reduce his/her stress when he/she

chose to participate for different reasons (Iwasaki & Mannell, 2000). Leisure strategies are more situation-specific and intentional than leisure beliefs, representing coping behaviour as a process which is consistent with transactional views of coping (e.g. Lazarus & Folkman, 1984). Three sub-dimensions exist: leisure mood enhancement (leisure as a means to promote positive mood), leisure companionship (leisure as a shared activity which promotes social support), and leisure palliative coping (leisure as a distractor from current problems). Iwasaki (2003) found support for this framework with a student sample. Specifically, leisure coping predicted both short-term (e.g. reduction of stress) and long-term outcomes (i.e. general health) over and above general coping.

In a qualitative study Hutchinson, Loy, Kleiber, and Dattilo (2003) reported that leisure offered escapism from everyday life, fostered feelings of belonging via shared activities, and promoted positive mood. Similarly, Shannon and Bourque (2006) reported that leisure activities provided social support and promoted wellbeing for individuals receiving cancer treatment and the presence of leisure coping strategies differentiated copers from those who did less well (Link, Robbins, Mancuso, & Charlson, 2004). Grafanaki, Pearson, Cini, Godula, McKenzie, Nason, and Anderegg (2005) found leisure engagement helped promote work/life balance amongst health professionals, enhanced work performance, and facilitated meaningful relationships. Chun and Lee (2010) found leisure provided opportunities to discover personal strengths and abilities, facilitated companionship, meaningful relationships, helped participants make sense of traumatic experiences, and generated positive emotions. Folkman (2008) highlighted the importance of positive emotions for coping with stress, as they help sustain coping effort, offer respite, and are associated with the use of adaptive coping. Leisure can generate positive emotion, facilitate adaptive coping and promote health (Kleiber et al. 2002; Salovey, Rothman, Detweiler, & Steward, 2000).

Traditionally, theory on stress and leisure has focussed on how leisure coping helps to regulate distress and minimise negative outcomes of distressing life events (Folkman & Moskowitz, 2000). This emphasis contrasts with Kleiber et al. (2002) who suggest leisure coping relates to wellbeing as a self-protective coping device, serving a variety of functions: buffering against negative life events, as a distraction from stress, and by generating positively-toned emotions and hope for the future.

Hood and Carruthers (2002) outline a leisure and wellbeing model that can be applied by therapeutic recreation services that embodies the paradigm shift from focussing on deficiencies to focussing on strengths to improve wellbeing (Carruthers & Hood, 2007; Hood & Carruthers, 2007). In this model, they argue that recreational leisure activities provide social support and develop valuable resources such as psychological strengths and positive emotions, and suggest ways individuals can be helped to enjoy leisure more and thus increase their wellbeing.

Leisure coping and resilience

A clear understanding of the role leisure coping plays in relation to stress and resilience is lacking (Iwasaki, 2006). A literature review identified only a few studies associating resilience with the stress-reducing properties of leisure coping; Iwasaki et al. (2005) found in a qualitative study that leisure coping promotes resilience by acting as a proactive coping strategy, providing respite from stress to regain the resources to handle difficulties. Developing support systems through leisure also promoted resilience to stress. Iwasaki (2006) in a longitudinal general population study also found that leisure coping enabled individuals to proactively deal with stress, and in turn restored coping resources and facilitated life balance.

Psychological resilience is defined as the ability to recover from adversity and react adaptively to stressful situations (Masten, 2009), and is a core component of psychological

wellbeing (Ryff & Singer, 2003). Resilience has been defined in several ways but most commonly as demonstrating flexibility in response to changing situational demands, with the ability to bounce back after negative emotional experiences (see Fletcher & Sarkar, 2013). Theorists such as Neenan (2009) have criticised conceptualizations of resilience that emphasise "bouncing back" because it creates the perception of quickly and effortlessly returning to a previous state, whereas resilience often develops over longer periods and can involve significant struggles, pain, and reorganization for the individual. However, it is generally agreed that resilience concerns positive adaptation despite the presence of risk or adversity (Luthar & Cicchetti, 2000). Research suggests that resilient individuals possess an optimistic and energetic approach to life and are characterised by high positive emotionality (Tugade & Fredrickson, 2004). However, positive emotions are not simply by-products of resilient thinking, they also enable resilient individuals to use creative and adaptive ways of coping ('sustainers' of coping effort) and provide respite from the negative emotions in the stressful experience (Tugade & Fredrickson, 2004). Leisure coping may be one constructive strategy used by resilient individuals to engender positive affect.

Recent evidence suggests that positive emotions help buffer against stress (Greenglass & Fiksenbaum, 2009). For example, positive coping, such as problem-focussed coping and positive reappraisal are associated with the occurrence and maintenance of positive affect (Folkman & Moskowitz, 2000) and increases in psychological wellbeing (Affleck & Tennen, 1996). These findings indicate that generating positive emotions is important for improving wellbeing. Positive emotion is a feature of the behavioural facilitation system that facilitates approach behaviour and the tendency to desire and seek rewards and goals (Watson, Weise, Vaidya, & Tellegen, 1999). Given the evidence linking positive emotions with leisure coping (Kleiber et al., 2002; Salovey et al., 2000) and resilience (Tugade & Fredrickson, 2004), it seems likely that positive emotion plays a significant role in how these variables effect

wellbeing. However, theory explaining how leisure coping and resilience positively impact on wellbeing is absent. It is hypothesised that the broaden-and-build theory (Fredrickson, 2001) could offer an empirically-supported explanation; specifically, that resilient individuals use leisure coping which cultivates positive emotion and leads to lower levels of stress and higher psychological wellbeing (flourishing).

The broaden-and-build theory

The broaden-and-build theory concerns the role of positive and negative emotions in the process of human adaptation (Fredrickson, 2004). Experience of positive emotions is theorised to broaden thoughts and actions, that is, it increases the ability to consider a wider range of factors cogent to responding to a situation, which in turn promote adaptive reactions to the environment. Such broadening facilitates the accrual of new resources that promote future wellbeing. Crucially, positive emotions are not just indicators of current wellbeing, but facilitate future wellbeing by acting as a catalyst for building resources, thus creating an upward spiral towards flourishing. Conversely, negative emotions narrow thoughts and actions thus limiting available resources for coping (Fredrickson, 2001). Specifically how this hypothesised catalytic effect occurs is still unclear.

According to the broaden-and-build theory, resilient individuals are more likely to use constructive means of coping which generate positive emotion (Tugade & Fredrickson, 2004). Having coped successfully, individuals feel good and learn that they can deal with similar situations in future. Hence, this experience of positive emotion is theorised to cause growth in coping resources thus facilitating greater wellbeing, future experience of positive affect, and in the longer-term greater levels of psychological resilience (Reschly, Huebner, Appleton, & Antaramian, 2008). While laboratory research by Fredrickson and colleagues provides support for positive affect promoting expanded thought and behaviour, helping to 'undo' the effects of negative emotions, the precise underlying mechanisms have not been

identified (Fredrickson, 2001). Gloria, Faulk, and Steinhardt (2012) found positive affect predicted lower work stress and greater levels of psychological resilience in public school teachers. In this study, positive affect also acted as a mediator between resilience and work stress. Fredrickson and Joiner (2002) reported that positive affect predicted the use of more flexible coping strategies. Mediational analyses provided support for the spiralling positive effects of coping and positive affect over time.

Research shows that coping and positive affect are also associated with flourishing, defined as optimal functioning, consisting of growth, generativity, purpose, and engagement (Diener et al., 2010). Reschly et al. (2008) reported that experiencing more positive affect and utilising adaptive coping methods predicted flourishing in high school students. Faulk, Gloria, and Steinhardt (2013) found that individuals using adaptive coping methods were more likely to be flourishing, whereas individuals using maladaptive coping were more likely to be languishing. This study will test Frederickson's theory further by examining whether leisure coping has a similar relationship with positive affect and flourishing in an undergraduate sample.

The present study

Using the broaden-and-build theory (Fredrickson, 2001) as a framework, the present study investigates whether resilience predicts leisure coping and positive affect and whether this relationship is predictive of higher levels of wellbeing (lower stress and higher flourishing). There is a lack of literature examining positive affect and leisure coping.

A theoretical model based on the broaden-and build theory was developed, proposing that resilient individuals use leisure coping as a constructive strategy which helps them to proactively cultivate positive emotions to deal with stress, increase levels of flourishing, and in the longer-term build psychological resources. Leisure coping and positive affect are hypothesised to be positively associated with one another, and to mediate the relationship

between resilience and wellbeing outcomes (stress and flourishing). Specifically, it is suggested that wellbeing will not be directly predicted by an individual's level of resilience, but indirectly by their coping behaviour and positive emotionality. This theoretical model was tested in UK undergraduates, a population known to experience heightened stress (Macaskill, 2012).

Method

Participants

Participants were 202 social science undergraduates from a post-92 UK University committed to widening participation (53 males, 149 females, mean age=22.82, *SD*=3.52). Whilst at university, 97 lived at home and 105 lived away, 47 lived in halls of residence and 58 in student houses/flats, and 100 worked in paid employment. A G-Power calculation indicated a sample of 162 to test the model using SEM and this is met.

Measures

Stress

The Perceived Stress Scale (PSS) (Cohen & Williamson, 1988) assesses the degree to which one's life is appraised as stressful over the past month. It consists of 10 items rated on a scale from 0 (*never*) to 4 (*very often*). Reported alpha reliability of the PSS is high (.85) (Cohen & Williamson, 1988) as in the current study, α=.89.

Leisure coping

The Leisure Coping Beliefs and Strategies Scale assesses leisure coping consistent with Iwasaki and Mannell's (2000) hierarchical model, and consists of two subscales, leisure beliefs (LCBS) and leisure coping strategies (LCSS). Responses are rated on a scale from 1 (*very strongly disagree*) to 7 (*very strongly agree*). The LCBS measures six dimensions: emotional support, esteem support, tangible aid, informational support, self-determination, and empowerment. The LCSS measures three dimensions: leisure companionship, leisure

palliative coping, and leisure mood enhancement. Participants were asked how they usually cope with stress. Reported internal reliability is good for the total scales (.91 for LCBS; .93 for LCSS), the dimensions of the LCBS (.70 to .87), and the LCSS (.71 to .82) (Iwasaki & Mannell, 2000). In this study reliability was satisfactory; self-determination (α=.74), leisure empowerment (α=.73), emotional support (α=.76), esteem support (α=.82), tangible aid (α=.85), informational support (α=.87), leisure palliative coping (α=.72), leisure companionship (α=.75), leisure mood enhancement (α=.71). Reliability for the total scales was good; LCBS (α=.87), LCSS (α=.83).

Positive affect

The positive affect subscale from the Positive and Negative Affectivity Schedule (Tugade & Fredrickson, 2004) assessed positive emotion. The subscale includes 18 Positive Affect (PA) items covering a comprehensive range of positive emotions. Participants rate the extent to which they felt the emotion over the past month using scale from 1 (*not at all*) to 5 (*extremely*). Reported reliability is high for the PA subscale (α=.90) (Tugade & Fredrickson, 2004) and was high in this study (α=.88).

Resilience

The Ego-Resiliency Scale (Block & Kremen, 1996) measures psychological resilience, defined as the ability to adjust in response to challenging situations. There are 14 items rated on a scale from 1 (*does not apply at all*) to 4 (*applies very strongly*). Reported reliability is satisfactory (α=.76) (Block & Kremen, 1996). Reliability in the present study was high, α=.89.

Flourishing

The Flourishing Scale (FS) (Diener et al., 2010) contains eight items measuring elements of human functioning including perceived competence, presence (or absence) of rewarding relationships, and having purpose in life. Items are rated on a scale from 1 (*strongly*

disagree) to 7 (*strongly agree*). Reported reliability is good (α=.87) (Diener et al., 2010) and α=.80 in this study.

Procedure

Through email across the university social sciences department, prospective participants received an information sheet describing the study and were invited to complete an anonymous online self-report questionnaire. Consent was indicated online and participants were fully debriefed afterwards. The University Research Ethics Committee approved the study.

Data analyses

Data screening was undertaken to check assumptions (presence of normality, linearity; absence of multicollinearity, outliers) (Tabachnick & Fidell, 2007). This resulted in 19 participants being excluded due to missing scores leaving a final sample of 183. An analysis of descriptive statistics (means, standard deviations) and correlations were performed to examine the data. Structural equation modelling (SEM) with maximum likelihood was conducted to test the proposed theoretical model using AMOS version 21.

Results

The means and standard deviations (Table 1) indicate that undergraduates had relatively high stress levels (*M*=25.87, *SD*=6.44) compared with previous norms for a general population sample aged 18-29 (*M*=14.2, *SD*=6.2) (Cohen, 1994).

Table 1

The means for resilience, positive affect, leisure beliefs and strategies, and flourishing are comparable to those reported in previous research (e.g. Diener et al., 2010; Kelly, 2011; Tugade & Fredrickson, 2004).

Pearson correlations were computed between all the variables (Table 2). There were no issues with multicollinearity, and all correlations were below .9. Perceived stress was

negatively associated with resilience and flourishing. All leisure coping variables were positively associated with resilience, and all except self-determination, tangible aid, information support, leisure companionship, and palliative coping were positively associated with flourishing. Positive affect was positively associated with resilience, flourishing, and leisure coping apart from leisure mood enhancement, and was negatively associated with perceived stress.

Table 2

Model specification

The measurement model and structural model were estimated sequentially (Anderson & Gerbing, 1988). Parcels of measured variables were used to indicate latent variables of stress, resilience, flourishing, and positive affect. EFA with orthogonal rotation was conducted on the items of each of the above variables. Based on factor loadings, items were assigned to corresponding parcels in descending order (Coffman & MacCallum, 2005). EFA found a single factor structure underlying the PSS and the FS, and so to include these single factors as indicators of latent variables of stress and flourishing, the variance of these single factors was determined by multiplying scale variance with alpha reliability (Kline, 2011). LCBS and LCSS subscales were used to indicate latent variables of leisure beliefs and leisure strategies respectively. Research supports the hierarchical structure of these measures (see Iwasaki & Mannell, 2000). Item parcelling increased the degrees of freedom and statistical power of the tested models (Coffman & MacCallum, 2005).

In the hypothesized model, stress and flourishing were dependent variables, resilience was the independent variable, and leisure beliefs, leisure strategies, and positive affect were mediating variables. All study variables were latent variables. Factor loadings of the measured variables on the latent variables were all significant (p<.001) (Table 3). The majority of indicators exhibited factor loadings above .60, satisfying the strict requirements

of Hair, Anderson, Tatham, and Black (1998). To evaluate model fit the chi-square statistics, Comparative Fit Index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) (Hu & Bentler, 1999) were used with an acceptable model requiring CFI>.90, SRMR<.08, and RMSEA<.10 (Browne & Cudeck, 1993). The full structural model demonstrated unacceptable data-model fit: χ^2 (77, N=183) =434.2, p<.001, CFI=.81, RMSEA=.16, SRMR=.10. Further inspection revealed that leisure strategies were not significantly associated with all other latent variables. The model was refined and leisure strategies were dropped from the model. The final model (Figure 1) demonstrated acceptable model fit: χ^2 (45, N=183) =155.29, p<.001, CFI=.92, RMSEA=.10, SRMR=.08. The Akaike Information Criterion (AIC) was used to compare this model with the initial model (Kline, 2011), revealing a lower AIC (245.29 compared with 550.21) supporting a better fit for the final model.

Table 3

The majority of path coefficients for the final model were significant at the p<.05 level. Resilience had a significant positive effect on both leisure beliefs (β=.29, p<.001) and positive affect (β=.49, p<.001), and leisure beliefs had a significant positive influence on positive affect (β=.16, p<.05). Resilience had a significant positive effect on flourishing (β=.34, p<.001) as did both leisure beliefs (β=.18, p<.05) and positive affect (β=.41, p<.001). The paths from leisure beliefs to stress (β=.10, p>.05) and from resilience to stress (β=.02, p>.05) were not significant. The model accounted for 35% of variance in perceived stress and 55% of variance in flourishing.

As the study is cross-sectional, the independent variable (i.e., resilience) and dependent variables (stress and flourishing) were swapped in alternative models to examine reverse relationships to test direction amongst the variables. Compared with the final model, the reversed model demonstrated a poorer data-model fit: χ^2 (45, N=183) =182.75, p<.001,

CFI=.89, RMSEA=.13, SRMR=.11. The lower AIC of the final model (AIC=245.29) further confirmed better data-model fit than the reversed model (AIC=272.75).

Figure 1

Mediating effects

Mediating effects were examined using Sobel Tests (Sobel, 1982) to assess the influence of each proposed mediator, as AMOS cannot examine the unique influence of two or more mediators when simultaneously included in SEM. Results indicated that leisure beliefs did not significantly mediate the relationship between resilience and stress ($z=.67$, $p>.05$) or between resilience and flourishing ($z=.75$, $p>.05$). Positive affect significantly mediated the relationship between resilience and stress ($z= -2.18$, $p<.05$) and between resilience and flourishing ($z=4.04$, $p<.001$). Crucially, a model was tested which excluded positive affect. In this model, resilience demonstrated a significant negative relationship with stress ($\beta= -.32$, $p<.001$), which was no longer significant after positive affect was included in the final model, providing strong evidence for the mediating influence of positive affect on the resilience-stress relationship. The model without positive affect demonstrated a poorer data-model fit than the final model on all relevant indices (CFI=.91, RMSEA=.13, SRMR=.09), supporting the inclusion of positive affect.

Discussion

Students provided an appropriate sample with mean levels of stress higher than the reported norms for a similar age group (Cohen, 1994). Resilience, leisure beliefs, and positive affect were positively associated with flourishing and were negatively associated with perceived stress as hypothesised. A general theoretical model was presented based on the broaden-and-build theory (Fredrickson, 2001, 2004) to explain how leisure coping may be predictive of wellbeing and, in the longer term, resilience. In particular, it was proposed that initial levels of resilience would predict leisure coping as a constructive means of coping, which in turn

would be associated with the experience of positive emotion. Positive emotion and leisure coping were suggested to directly predict wellbeing outcomes in the model, with resilience having an indirect effect.

SEM was used to test the proposed model, and the findings generally support the hypotheses. In particular, resilience had a significant positive effect on flourishing, as did leisure coping beliefs. Positive affect was found to mediate the relationship between resilience and flourishing, and between resilience and stress. Leisure coping beliefs, however, were not found to mediate the resilience-wellbeing relationship. An alternative model was tested, swapping the independent and dependent variables but this did not fit the data as well, thus supporting the suggested direction of the variables; specifically, that resilience was predictive of leisure beliefs, positive affect, and wellbeing.

The findings are consistent with the broaden-and-build theory regarding the role of resilience in coping. In particular, the results support the idea that resilient individuals are more likely to use constructive means of coping (such as leisure coping) to proactively cultivate positive emotion which counteracts the experience of stress and promotes wellbeing. Research consistently shows that positive emotions help buffer against stress by counteracting the negative emotion associated with stress (Folkman & Moskowitz, 2000; Tugade & Fredrickson, 2004). The finding that positive affect is positively associated with leisure coping beliefs, mediates the relationship between resilience and perceived stress and between resilience and flourishing, supports the value of positive emotion for lowering levels of stress amongst undergraduates. The inference is that stress appraisal and psychological functioning are not directly determined by students' initial levels of psychological resilience, but rather indirectly via their positive affectivity. This outcome supports prior research on the central role of positive emotions in replenishing resources and promoting wellbeing (Folkman 2008; Gloria et al., 2013). In this study, leisure coping predicts wellbeing through

its significant association with positive emotion as Kleiber et al. (2002) suggested. Leisure coping is predictive of positive affect which provides a 'breather' from stress and sustains coping.

Resilience predicting leisure coping is new in the literature, but fits with the evidence that resilient individuals use other adaptive methods of coping (Campbell-Sills, Cohan, & Stein, 2006). The finding that leisure coping beliefs, but not strategies, are important in the theoretical model and are associated with resilience and predict wellbeing outcomes is intriguing. Leisure beliefs refer to believing that leisure provides a means of developing stress-resistant characteristics (autonomy beliefs) and that friendships acquired through leisure provide a source of social support (friendship beliefs) (Iwasaki & Mannell, 2000). Leisure beliefs may have emerged as more important than leisure strategies because leisure beliefs are relatively stable with more enduring effects on health and wellbeing, while leisure strategies are transient and situation-based. For example, Iwasaki (2003) reported that leisure beliefs more strongly predicted wellbeing than leisure strategies did, regardless of stress levels. O'Rourke, Kupferschmidt, Claxton, Smith, Chappell, and Beattie (2010) reported that psychological resilience is consistently associated with perceived control beliefs. Here resilience appears to link with the belief that stress resistant characteristics and a sense of autonomy develop through leisure.

Although leisure beliefs do not predict stress appraisal in the model, they do assist flourishing via their association with positive affect among the undergraduate sample. Leisure autonomy beliefs may be predictive of flourishing, as students believe that by participating in leisure activities they will develop a sense of mastery, cultivate feelings of empowerment, and experience control and freedom. Leisure providing a context for psychological needs, such as mastery and control, to develop has the potential to contribute to feelings of self-actualisation (Newman, Tay, & Diener, 2014).

With regards to leisure friendship beliefs, a means of perceived social support, research consistently supports the benefit of social support for coping with stress amongst undergraduate students, and in this study leisure friendships can provide that support. Lamothe et al. (1995) reported that lack of support is a risk factor for poor adjustment, whereas adequate support protects against stress. For undergraduates the perception and presence of a support network at university is fundamental to developing a sense of integration and belonging (Denovan & Macaskill, 2013). Research, including this study, suggests that strong, emotionally attached friendships can develop over time through participating in shared leisure pursuits and this is predictive of higher levels of wellbeing (Iwasaki, 2003; Mannell, Zuzanek, & Larson, 1988).

Limitations

While these results are interesting, the ability to establish strong conclusions concerning mediation is limited due to the cross-sectional design; however, previous research supports the direction of the relationships proposed (Gloria et al., 2012). An alternative model with the order of variables reversed was tested and this indicated a poorer fit than the theoretical model, adding weight to the findings. Nonetheless, longitudinal examination of the model is required in future. This would provide insight into how positive affect and leisure coping influence one another over time relative to resilience and flourishing. This would also enable examination of resource building over time to assess whether leisure coping and positive affect influence long-term outcomes such as resilience development, which is a key proposition of the broaden-and-build theory. A further limitation is that other methods of coping were not assessed so whether leisure coping predicts wellbeing outcomes beyond other coping methods is unknown. Future research would benefit from considering such issues.

Implications

Given the high stress levels in undergraduates (Denovan & Macaskill, 2013), universities should promote the health benefits of leisure activities and encourage students to participate. It is about the importance of allowing space for 'batteries to be charged'. While some degree of stress is inevitable amongst undergraduates, stress management interventions could usefully be offered that focus on facilitating positive affect, and adoption of adaptive coping strategies as a way to promote resilience and flourishing. This could help equip students with additional coping resources given that positive affect is within the individual's locus of control and to an extent malleable, whereas stressful demands at university are often unavoidable. By educating students about the benefits of engagement in positive leisure pursuits personal growth, resilience, and health can be promoted (Yarnal, Qian, Hustad, & Sims, 2013).

Conclusion

This paper presents a theoretical model exploring whether resilient individuals use leisure coping proactively to cultivate positive emotions that in turn predict wellbeing (lower stress and higher flourishing). Leisure coping and positive affect were suggested to mediate the resilience-wellbeing relationship. The findings generally support the model's predictions. Resilience had a significant positive effect on leisure beliefs, flourishing, positive affect, and stress (once positive affect was removed from the analysis). Leisure beliefs were also positively associated with all latent variables apart from stress, and positive affect mediated the resilience-wellbeing relationship. These results suggest that amongst undergraduates with their generally high stress levels, students who are more resilient may use leisure as a means of developing stress-resistant characteristics, to offer respite from stress, and as a source of social support, which predict higher levels of psychological wellbeing and this may increase psychological resilience longer term. Positive affect was a key factor in these relationships, being associated with greater leisure coping resources and directly predicting wellbeing

outcomes in the model, with resilience having an indirect effect. Promoting leisure engagement among students can help develop psychological resources and promote positive affect; a useful strategy even when stress levels are high.

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Table 1 Mean and standard deviation for study variables (*N*=183)

Variable	***M***	***SD***
Perceived stress	25.87	6.44
Self determination	36.29	5.34
Leisure empowerment	34.59	5.16
Emotional support	20.87	4.01
Esteem support	20.83	3.75
Tangible aid	20.49	4.32
Information support	21.35	4.10
Leisure companionship	30.31	5.31
Leisure palliative coping	30.43	4.91
Leisure mood enhancement	29.39	3.65
Positive affect	59.86	14.29
Resilience	39.83	6.48
Flourishing	43.67	7.23

Table 2 Bivariate correlations among study variables (*N*=183)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Perceived stress		-.51***	-.05	-.11	-.13*	-.11	-.18*	-.04	-.09	.13*	-.01	-.25***	-.46***
2. Positive affect			.15*	.30***	.23*	.32***	.27***	.19*	.24***	.19*	.05	.51***	.58***
3. Self determination				.63***	.33***	.43***	.25***	.32***	.48***	.55***	-.01	.37***	.12
4. Leisure empowerment					.47***	.59***	.34***	.41***	.58***	.67***	-.02	.48***	.39***
5. Emotional support						.79***	.71***	.76***	.74***	.39***	-.10	.19*	.29***
6. Esteem support							.68***	.78***	.72***	.54***	-.07	.41***	.40***
7. Tangible aid								.76***	.55***	.21*	-.07	.20*	.11
8. Information support									.71***	.34***	.13*	.20*	.12
9. Leisure companionship										.61***	-.03	.28***	.11
10. Leisure palliative coping											.01	.37***	.10
11. Leisure mood enhancement												.13*	-.18*
12. Resilience													.51***
13. Flourishing													

Note. *p<.05; ***p<.001

Table 3 Standardized factor loadings for item parcel indicators of latent variables

Item parcel	***β***
Leisure beliefs	
Self determination	.44***
Empowerment	.63***
Emotional support	.87***
Esteem support	.93***
Tangible aid	.73***
Informational support	.83***
Leisure strategies	
Leisure companionship	.83***
Leisure palliative coping	.78***
Leisure mood enhancement	.79***
Resilience	
Parcel 1 (item1, 2, 4, 6, 9, 10, 12, 13, 14)	.56***
Parcel 2 (item 3, 5, 7, 8, 11)	.40***
Positive affect	
Parcel 1 (item 2, 5, 6, 7, 8, 10, 11, 12, 13)	.93***
Parcel 2 (item 1, 3, 4, 9, 14, 15, 16, 17, 18)	.78***
Perceived stress (all scale items)	.94***
Flourishing (all scale items)	.94***

Note. ***p<.001

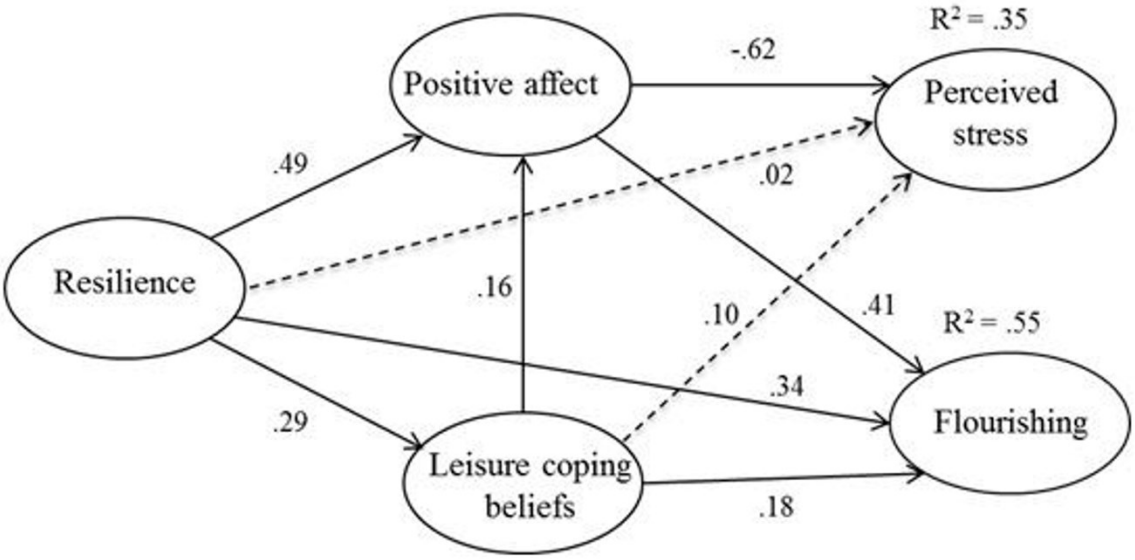

Figure 1 Standardized estimates and squared multiple correlations (R^2) of the final mediation model of resilience, leisure coping beliefs, positive affect, perceived stress, and flourishing. Standardized regression coefficients of the error terms and measured variables are not shown. Solid lines indicate standardized coefficients (all are significant at $p<.05$). Discontinuous lines are non-significant paths